Formulas:
The Fourier series expansion of a function \( f(t) \) of fundamental period \( L \) can be written as

\[
f(t) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos \left( \frac{2\pi nt}{L} \right) + \sum_{n=1}^{\infty} b_n \sin \left( \frac{2\pi nt}{L} \right),
\]

where the coefficients are given by the Euler formulas:

\[
a_0 = \frac{2}{L} \int_{t_0}^{t_0+L} f(t) \, dt
\]
\[
a_n = \frac{2}{L} \int_{t_0}^{t_0+L} f(t) \cos \left( \frac{2\pi nt}{L} \right) \, dt
\]
\[
b_n = \frac{2}{L} \int_{t_0}^{t_0+L} f(t) \sin \left( \frac{2\pi nt}{L} \right) \, dt
\]

Questions:

1. Check whether the following functions of \( x \) are odd, even, or neither. [2 points]
   
   (a) \( x^2|x| \)
   
   (b) \( \sin(2x)\cos(x) \)

2. Find the Fourier series expansion of the periodic function depicted in the following plot. [6 points]

![Graph of a periodic function](image-url)
3. Without doing any further integration, write the full Fourier series expansion of the following functions. [4 points]

(a) \[ g(t) \]

(b) \[ h(t) \]